



October 2, 2008

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 07-AB-1632 and 08-IEP-1F
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512

SUBJECT: AB 1632 Assessment

California Energy Commission:

On behalf of Environment California Research & Policy Center, I am submitting the attached comments to the draft consultant report, *AB 1632 Assessment of California's Operating Nuclear Plants*.

In general, we believe AB 1632, and the study it requires, is a very important step in protecting California residents and ratepayers from unnecessary environmental and financial risk associated with the state's aging nuclear power plants. We believe California is far better off investing in energy efficiency and clean renewable energy in the years ahead, and phasing out the usage of nuclear power altogether.

Thank you for the opportunity to submit these comments.

Sincerely,
Bernadette Del Chiaro
Clean Energy Advocate

Comments by Environment California Research & Policy Center on the *AB 1632 Assessment of California's Operating Nuclear Plants* Draft Report
October 2, 2008

Overall Comments

Environment California Research & Policy Center believes the AB 1632 draft study assessing various issues related to California's aging nuclear power plants is an extremely important document and greatly appreciate the opportunity to make comments.

Rising energy prices, instability in oil and natural gas markets, and increasing concerns about global warming all point to one conclusion: America must transition to a new energy future that is less reliant on fossil fuels and that reduces emissions that cause global warming. Proponents of nuclear power claim that their technology can meet these challenges—an echo of the claims of 50 years ago that nuclear power would meet America's growing demand for energy at prices that were "too cheap to meter."

Yet, America's first experiment with nuclear power has been a disaster and there is little reason to believe that California should continue to rely on this technology. Across the country, tens of billions of dollars were spent on the construction of nuclear power plants, some of which were cancelled in mid-stream and never generated a kilowatt of electricity. Serious accidents at Three Mile Island and later Chernobyl caused many Californians to have serious (and justified) concerns about the safety of the nuclear reactors in their midst. And the nation's nuclear power plants have generated tens of thousands of tons of hazardous nuclear waste, which still does not have a permanent and safe home.

In the wake of this experience, California is right to carefully study the future role nuclear power in serving California's future energy needs. And, we believe that the draft assessment should more thoroughly study and acknowledge all the issues related to nuclear power such as those hidden costs and risks highlighted here. In addition, the study should more thoroughly examine the alternatives to nuclear power, namely energy efficiency and clean, renewable energy.

The Real Cost of Existing Nuclear Power Plants

Nuclear power remains a very expensive option for satisfying the California's energy needs even with regards to existing nuclear reactors. For years, poor management, frequent shutdowns, and operational difficulties made nuclear power plants an economic albatross. When restructuring of the electric industry began in the early 1990s, it was widely assumed that many nuclear power plants would be unable to compete and would eventually shut down.

In recent years, however, the nuclear industry has achieved a remarkable turnaround in the existing plants. The cost of power from existing nuclear reactors has dipped to less than 2 cents per kilowatthour—less expensive than most fossil fuel generated power. But the operating costs of nuclear power plants are just the tip of the iceberg. Below the surface lurk many hidden costs that saddle ratepayers and taxpayers with much of the total bill for nuclear power, making nuclear reactors of dubious economic value.

Capital Costs

Proponents of nuclear power have pointed to the low cost of operating the current generation of nuclear plants as proof that nuclear power is not expensive.¹ However, focusing on operating costs alone ignores the tens of billions of dollars that have been paid—and that continue to be paid—by electricity ratepayers to finance the capital costs of building those plants.

Under traditional regulatory systems, electricity ratepayers assume the full capital cost (including financing costs) of building power plants, provided that investment in those plants was prudent and that the facility is “used and useful.” Today, however, most of the nation’s nuclear power plants are in states that have chosen to “restructure” their electricity industries by deregulating the retail side of the electricity business and the generation of power, such as California.² This is not an accident: the momentum for restructuring during the 1990s was greatest in states that had the highest electricity rates. These states were, not coincidentally, among those that had made the biggest and most costly gambles on nuclear power.³

At the outset of restructuring, the architects of the new electricity system were faced with a problem: nuclear power plants were judged to be profoundly uneconomic. In a restructured market in which consumers could buy power from any generator, no one would pay enough for power to cover the capital and operating costs of a nuclear power plant—particularly when less expensive natural gas-fired power plants were free to enter the market and compete. Inevitably, it was thought, someone would have to be saddled with the “stranded” share of the plants’ capital costs—either the utilities themselves or ratepayers.

The amount of money at stake ran to the billions of dollars—in the case of California alone, more than \$20 billion.⁴ Most states allowed utilities to recover some or all of these stranded costs through a “transition charge” that would remain on consumers’ utility bills either for a defined period of time or until all the stranded costs were recovered.

Federal Subsidies

Nuclear power plant owners also benefit from generous public subsidies, mostly at the federal level. Indeed, the nuclear industry likely would not exist were it not for the federal government’s underwriting of nuclear research and development, liability insurance and other aspects of nuclear power plant operation.

According to one estimate, the nuclear power industry received upwards of \$145 billion in federal subsidies between 1947 and 1999—or more than \$1 billion for every operating nuclear reactor in the U.S.⁵ And the subsidies continue to the present: the recently enacted federal Energy Policy Act

¹ See, for example, Patrick Moore, “Going Nuclear: A Green Makes the Case,” *Washington Post*, 16 April 2006. Moore claims that nuclear power “is in fact one of the least expensive energy sources,” citing only the cost of operating existing reactors.

² Nuclear Energy Institute, *Nuclear Plants in States Implementing Retail Competition*, downloaded from www.nei.org/documents/nuclearplants.pdf, 24 January 2006.

³ States with nuclear power plants have among the nation’s highest electricity rates. As of 2001, rates were approximately 25 percent higher in states with nuclear power plants than in states without. Source: Public Citizen, *Consumers in Nuclear States Pay 25 Percent More for Electricity, Analysis Shows*, [press release], 12 June 2001.

⁴ Nuclear Information and Resource Service, *Talking Points on Bush/Cheney Energy Plan*, downloaded from www.nirs.org/nukerelapse/bush/talkingpointsonbush.htm, 24 January 2006.

⁵ \$145 billion from Marshall Goldberg, Renewable Energy Policy Project, *Federal Energy Subsidies: Not All Technologies Are Created Equal*, July 2000.

adds an additional \$4.8 billion in direct subsidies to the nuclear industry, as well as up to \$7.3 billion in tax incentives.⁶

Among the largest ongoing subsidies is the liability protection provided under the Price-Anderson Act. The act caps the liability of the nuclear industry in the case of a catastrophic nuclear accident, meaning that either the victims of a nuclear disaster, taxpayers or both would be held responsible for any additional costs. The nuclear industry denies that Price-Anderson represents a “subsidy,” but the amount of additional insurance coverage nuclear power plants would be required to hold to cover their full liability would be significant—if they could find a willing insurer at all. The value of the Price-Anderson Act subsidy has been estimated at between \$3 million and \$33 million per reactor per year.⁷ Again, these are costs that are not included in the cost that the nuclear industry charges for power from its plants, making nuclear power artificially cheap.⁸

Security Costs

Among the most difficult-to-quantify additional costs of nuclear power are the costs of providing security and emergency support services to nuclear power plants, particularly in the wake of the September 11, 2001 terrorist attacks. Nuclear power plant owners are responsible for the cost of securing their plants. However, the need to protect against attacks on nuclear power plants has created the need for increased planning at the local, state and federal levels. In addition, in the immediate wake of the September 11th attacks, National Guard and Coast Guard units were dispatched to secure nuclear power plants.⁹ In 2005, approximately \$65 million in homeland security funding was allocated to the NRC.¹⁰ These costs for emergency planning, emergency military response or homeland security funding for the NRC are further additional costs that are paid by taxpayers and hide the true cost of nuclear power.

The Preferred Alternative: Energy Efficiency and Renewable Energy

California is the most technologically and economically advanced state in the country, blessed with vast natural and intellectual resources. Our state also has a track record of leading the charge in response to major challenges and achieving unthinkable goals. If any state in the country is capable of creating an energy system that can fuel our economy while preserving our environment and our long-term security, it should be California.

Phasing out the use of nuclear power in California and replacing it with efficiency improvements and renewable energy should be a top goal of the state and a key piece of the state’s vision for a

⁶ \$4.8 billion from Taxpayers for Common Sense, *Nuclear Subsidies in the Energy Bill: A Spending Explosion*, downloaded from www.taxpayer.net, 14 December 2005; \$7.3 billion from U.S. PIRG and Friends of the Earth, *Final Energy Tax Package Overwhelmingly Favors Polluting Industries*, 27 July 2005.

⁷ Jill Lancelot, Taxpayers for Common Sense, *Price-Anderson Act: Special Subsidies and Protections for the Nuclear Industry*, downloaded from www.taxpayer.net/energy/priceanderson.htm, 18 January 2006.

⁸ In July 2005 testimony before a congressional committee, General Atomics Senior Vice President David Baldwin agreed that Price-Anderson was a “disincentive for safety” and should be phased down over time, noting that reactors that were truly “inherently safe” would not need the protection Price-Anderson provides. See *The Next Generation of Nuclear Power*, Hearing Before the Subcommittee on Energy and Resources, Committee on Government Reform, U.S. House of Representatives, 29 June 2005.

⁹ U.S. Nuclear Regulatory Commission, *Frequently Asked Questions About NRC’s Response to the 9/11/01 Events*, downloaded from www.nrc.gov/what-we-do/safeguards/faq-911.html, 24 January 2006.

¹⁰ Doug Koplou, EarthTrack Inc., *Nuclear Power in the U.S.: Still Not Viable Without Subsidy*, Power Point presentation to Nuclear Power and Global Warming Symposium, Nuclear Policy Research Institute, November 2005.

clean energy future, right alongside our goals to reduce our dependence on coal, oil and natural gas. California should not allow itself to be backed into a dead-end corner in which the only choice opposite fossil fuels is nuclear power. Put another way, California should not try to solve global warming with nuclear power. Doing so would serve only to replace one dire problem with another of comparable social, environmental and economic ramifications. Instead, California should look to aggressive conservation, efficiency and renewable energy alternatives as a means of shifting away from both fossil fuels and nuclear power over the next two decades.

Wind, Geothermal, Tidal

The good news is we are developing renewable energy at a faster pace than ever before. The amount of wind power installed in the United States has nearly doubled since the end of 2005. California is home to some of the largest wind farms in the world, and much more remains to be developed. Off-shore wind is of particular interest with regards to the question of shutting down California's coastal nuclear power plants and replacing them with renewable energy capacity. The Energy Commission should study the potential for off-shore wind along California's coast. The same goes for tidal energy.

The bottom line is California has tremendous renewable energy resources that have yet to be tapped into. Much will change between now and 2022/2024 when California's nuclear power plants reach the end of their current operating licenses. Such changes should be taken into consideration within this study.

Distributed Solar Power

Similar to the great growth in the wind industry, the installation of solar photovoltaic panels in the United States increased by approximately 83 percent in 2007, thanks in large part to the successful implementation of the Million Solar Roofs Initiative in California.¹¹ In fact, it is important for this draft assessment to specifically study and note the extent to which distributed generation technologies, like solar photovoltaic systems on rooftops throughout the state, can and will contribute to the state's energy needs and economic growth.

For example, over the past two years, California has installed more solar power than in the previous ten years combined. We went from having 140 MW of installed solar power throughout the state at the end of 2005, to adding 200 MW, including 60 MW in the first half of 2008 alone. By 2017, long before California's aging nuclear power plants will face the end of their current operating licenses, California will have installed at least 3,000 MW of rooftop solar power throughout the state.

More time should be taken to study the impact distributed generation like solar power will have on California's future electricity needs and the state's future need for nuclear power.

Concentrating Solar Power

While the growth of wind power and solar photovoltaics has captured headlines and broad public attention, another renewable energy boom—using a technology unfamiliar to many Americans—is beginning to take place in the deserts of the American Southwest and other locations with strong, consistent sunlight around the world. Concentrating solar power provides another powerful tool the United States can use to reduce our contribution to global warming and address the nation's energy challenges.

¹¹ See updates from the California Solar Initiative, www.gosolarcalifornia.ca.gov.

The National Renewable Energy Laboratory believes there is the potential for nearly 7,000 gigawatts (GW) of solar thermal power generation in the southwestern United States – well in excess of California’s nuclear capacity.¹² CSP plants are also becoming cost-competitive with other power generation technologies that do not produce carbon dioxide. The cost of energy from solar thermal power plants is estimated to be approximately 14 to 16 cents/kWh—competitive in cost with theoretical coal-fired power plants that capture and store their carbon dioxide emissions and with new nuclear power plants.¹³ CSP development has accelerated dramatically since the beginning of 2007. More than 2,800 MW of solar thermal projects are in some phase of development nationwide and could be completed by 2012.

CSP benefits the environment and America’s economy. CSP can play a leading role in the electric power system. Unlike intermittent forms of renewable energy, CSP plants with thermal energy storage can deliver power when it is needed to serve demand. CSP plants can be designed to provide either peak or baseload power, enabling them to address a variety of needs within the electric grid. Solar thermal plants create permanent jobs for local economies. Construction of 80 GW of CSP power has the potential to generate between 75,000 and 140,000 permanent, green jobs for Americans.

More time should be taken to study the impact that CSP will have on California’s future electricity needs and the state’s future need for nuclear power. Over the next two decades, many changes will happen with regards to tapping into the vast renewable energy resources in California and neighboring states. This report should take the time and resources needed to thoroughly understand the potential for these and other clean energy solutions.

Renewable Energy and Jobs

There is much to say about the potential for renewable energy to create more jobs and economic growth in California than a continued reliance on nuclear power and fossil fuel generation. The general rule is that renewable energy technologies generate 4-5 times more jobs than their unsustainable alternatives.

Furthermore, the future market for renewable energy will go beyond the current communities currently invested in renewable resources. For example, should San Luis Obispo County more heavily invest in technologies such as solar photovoltaic systems, off shore wind or tidal, the county could see more jobs and revenue as a result. The same could be said for the communities surrounding San Onofre.

Already, San Luis Obispo County is home to five different clean energy companies employing at least 43 individuals with annual revenues of more than \$120 million. In Orange County, clean energy companies employ more than 380 individuals and report up to \$200 million in annual revenue. In San Diego, clean energy companies employ more than 41,000 people and report more than \$250 million in annual revenue.¹⁴

Conclusion

¹² Del Chiaro, B., Payne, S., and Dutzik, T., “On the Rise: Solar Thermal Power and the Fight Against Global Warming,” Environment America Research & Policy Center, 2008.

¹³ Ibid.

¹⁴ Heavner, B. and Del Chiaro, B. “Renewable Energy and Jobs: Employment Impacts of Developing Markets for Renewables in California”, Environment California Research & Policy Center, July 2003.

California has a lot to gain by phasing out the use of our aging nuclear power plants and replacing the generation capacity with energy efficiency and renewable energy technologies. By doing so, the state can better prevent serious accidents at the aging facilities, better address the ongoing and unresolved problems related to high-level nuclear waste, and save taxpayers and ratepayers the ongoing and ever increasing costs of maintaining these aging plants, among other cost savings. Furthermore, by shifting to clean, renewable energy, California can gain tremendous environmental and economic benefits not available to us under the current nuclear-fossil fuel dominant energy strategy.

The draft AB 1632 Assessment of California's Operating Nuclear Plants does a good job of initiating a conversation about the benefits of replacing California's two operating nuclear power plants with alternative technologies but much more needs to be studied and considered before this study can be considered complete.

Again, in conclusion, Environment California Research & Policy Center greatly appreciates the opportunity to submit these brief comments. We believe the assessment study is a very important document for the state and that much more time and resources should be put into it to improve upon its initial draft. In short, California has near limitless potential when it comes to true clean energy solutions and much will change between now and 2022. Ultimately, nuclear power, like fossil fuels, should be left behind as a failed technology of the previous century and new, truly clean and sustainable energy technologies should be ushered into the forefront in the years ahead.